

REMARKS

The foregoing amendments relate to the objections to the specification, as set forth on pages 2-3 of the Office action, in an effort to avoid or overcome such objections. The amendments also relate to the rejections of claims 1-7 as set forth on pages 3-5 of the office action. Claims 1, 3, 4 and 6 have therefore been amended and new claim 8 submitted, in order to emphasize the patentable distinctions of the subject invention being claimed over the prior art references relied on, as hereinafter explained.

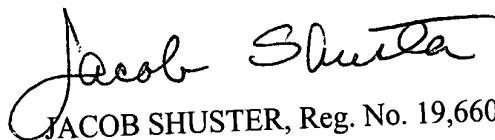
As to the drawings, formal drawings are now being prepared which will embody corrections overcoming the objections as stated on page 3 of the Office action. Such formal drawings will accordingly be submitted in advance of the allowance of the present application. In the meantime, copies of the informal drawings as filed are being submitted herewith, modified so as to embody the proposed corrections in compliance with the requirements as set forth in the Office action in regard thereto.

Claims 1-4 and 6 have been rejected under 35 U.S.C. 102(e) as being anticipated by the disclosure in U.S. Patent No. 6,284,451 to Funatsu et al. According to the disclosure in the Funatsu et al. patent, cells 10 to be processed are fed through an inlet 6 into a space 5 between membrane elements of a bundle, in the form of hollow fibers 2 disposed within a module housing 1, as shown in FIGS. 1 and 3. Such hollow or tubular fibers 2 extend axially between opposite axial ends of the module housing 1, positioned in laterally spaced relation to each other. A culture medium undergoes passage through the hollow fibers 2, between inflow inlet 7 and outflow outlet 8 at said opposite axial ends of the module housing 1. The cells 10 are thereby processed between the hollow fibers 2 within the space of the module housing 12 for withdrawal therefrom as a cleansed portion through a drain 18, without mixing.

In contrast to the foregoing summarized disclosure in the Funatsu et al. patent, the subject invention as disclosed in the present application features a contaminate-laden fluid conducted through module housing 12, between inlet and outlet ends thereof. Elongated, non-tubular membrane elements 20 are positioned within the module housing in laterally spaced relation to each other throughout. The contaminate-laden fluid undergoing passage through the module chamber is thereby processed by filtration, in response to flow laterally through the membrane elements into a radially outer percolation chamber portion 25. Thus, the latter referred to disclosure in the present application not only involves certain differences from that in the Funatsu et al. patent in regard to arrangement and type of apparatus components utilized, but also involves functional inconsistencies associated therewith. By reason of such referred to functional inconsistencies, involving for example cleansing of a fluid by filtration through non-tubular membrane elements without mixing, in contrast to processing of cells outside of tubular membrane elements by centrifugal force and culturing by mixing thereof with oxygen filtered from a culture medium passing through the tubular membrane elements. By virtue of such functionally inconsistencies, the distinctions are significant in that they not only preclude anticipation under 35 U.S.C. 102, but also obviousness under 35 U.S.C. 103. Therefore, claims 1-4, 6 and 8, especially as now amended, definitely distinguish over the prior art in a patentable sense. Thus, claim 1 specifies for example, "processing elements--through which the filtered fluid is laterally withdrawn as a cleansed portion--", while new claim 8 specifies "--withdrawing the cleansed portion by lateral passage through the membrane elements to undergo said filtration without mixing thereof with the contaminate-laden fluid undergoing said axial flow passage through the module housing.

In view of the foregoing, the allowance of amended claims 1-7 and new claim 8 is believed to be in order. An allowance of the present application based on such claims is therefore requested.

Respectfully submitted,



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MARKED-UP VERSION OF AMENDMENTS
TO THE SPECIFICATION

Please amend the paragraph numbered [0015] bridging pages 5 and 6, from line 17 on page 5 through line 8 on page 6, as follows:

[0015] As shown in FIG. 5, a plurality of the elements 20 to be bundled in close parallel spaced relation to each other are disposed in their desired relative positions within a body of uncured epoxy resin from which one of the holding discs 24 is separately formed within one of the seal rings 22 before assembly within a module 10. The epoxy resin in the uncured fluent state will fill all spaces between the axial end portions of the elements 20 to be bounded within the inner diameter of the annular seal ring 22. Positioning of the filter elements 20 during the latter described stage of the fabrication procedure, before molding of said one of the holding discs 24, is established by clamping between fixedly spaced rigid plates 30 and 32 on which resilient material layers 34 and 36 are respectively disposed. To facilitate molding, a thin mold release film 38 is placed on the resilient layer 34 underlying the lower ends of the elements 20 within the uncured body of epoxy resin retained within the seal ring ²²~~24~~ under pressure as denoted by arrow 40 and a clamping pressure on the plate 32 as denoted by arrow 42. The thickness of the holding discs 24 is determined by the height of the seal ring 22. When one of such discs 24 is so formed upon full curing of the epoxy resin after 24 hours for example, the element bundle as shown in FIG. 5 is then rotated 180° and the same fabrication procedure is repeated to form another holding disc 24 at the other ends of the elements 20, not shown in FIG. 5, to complete bundling of the elements before transfer to the module 10 for assembly therein.

Page 9, rewrite the ABSTRACT OF THE DISCLOSURE as follows:

[A plurality of elongated] Elongated processing elements are anchored at opposite ends thereof between holding discs retained within rigid seal rings enclosing a chamber within a cylindrical module housing, through which a flow of contaminate-laden bilgewater is conducted. Such [anchoring] discs are formed within the seal rings with the elongated elements [adjustably] positioned therein [between clamping plates] by deposit and curing of epoxy resin. Such elements [so bundled by the cured epoxy resin discs between a pair of the seal rings] are then assembled within the module housing to seal the chamber thereby established therein. Spacing between the bundled elements is maintained by spacers to accommodate filtration of the bilgewater during flow thereof through the chamber and lateral outflow of a cleansed filtered portion from the elements through a drain outlet.

MARKUP-VERSION OF AMENDMENTS

TO THE CLAIMS

Rewrite claims 1, 2, 3, 4 and 6 as follows:

1. (Amended) In combination with a housing of a module enclosing a plurality of elongated processing elements through which a contaminate-laden fluid is filtered; the improvement residing in: [preassembled] sealing means for establishing a sealed chamber within the module housing through which the contaminate-laden fluid is conducted externally of the processing elements; [and] holding means for positioning the elongated processing elements within the sealed chamber [therein] in a bundled condition; and spacer means for maintaining the bundled processing elements in [adjustably] laterally spaced relation to each other throughout

within the sealed chamber through which the filtered fluid is laterally withdrawn as a cleansed portion of the contaminate-laden fluid.

2. (Amended) The combination as defined in claim 1, [wherein a contaminate laden fluid is conducted through the housing to undergo cleansing; and] including drain means on the housing for discharging [a] said cleansed portion of the contaminate-laden fluid from the sealed chamber in response to [processing] filtration by the elongated processing elements.
3. (Amended) The combination as defined in claim 2, wherein said [preassembled] sealing means includes: a pair of axially spaced seal rings in radially outer sealing contact with the module housing; and said holding means is retained within said seal rings for anchoring therein opposite end portions of the processing elements in the bundled condition.
4. (Amended) The combination as defined in claim 3, wherein said [preassembled] sealing means is assembled with the processing elements adjustably positioned therein by the holding means before bundling within bodies of epoxy resin subsequently cured under clamping pressure; [to form] said holding means being thereby retained within the seal rings before assembly within the module housing.
6. (Amended) The combination as defined in claim 1, wherein said [preassembled] sealing means is assembled with the [elongated] processing elements adjustably positioned therein before bundling within bodies of epoxy resin subsequently cured under clamping pressure to form said holding means before assembly within the module housing.

Kindly add the following claim:

8. In a method of processing a contaminate-laden fluid into a cleansed portion thereof within a module housing by filtration through membrane elements, the improvement residing in the steps of: positioning the membrane elements within the module housing in laterally spaced relation to each other throughout while extending between opposite axial ends thereof: conducting the contaminate-laden fluid through the module housing for axial flow passage therethrough so as to thereby undergo said filtration into the cleansed portion; and withdrawing the cleansed portion by lateral passage through the membrane elements to undergo said filtration without mixing thereof with the contaminate-laden fluid undergoing said axial flow passage through the module housing.